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EXAMINER	
KIM, WESLEY LEO	
ART UNIT	**PAPER NUMBER**
2683	3

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/083,508	Applicant(s) FUKUHARA ET AL
	Examiner Wesley L Kim	Art Unit 2683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-8* is/are rejected.

7)☒ Claim(s) *5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figure 3; 3-1-1, 3-1-2, 3-3-1. Figure 4; 4-1-1, 4-1-2. Figure 5; 5-1-1, 5-1-2. Figure 6; 6-1-(1-6). Figure 8; 83b. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent,

except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Shapira et al.

Regarding claim 1, Shapira et al discloses a radio LAN master station (Par.5;1-2) comprising; a transceiver (Fig.4A), a plurality of directivity antennas directed to each specific directions (Par.5;2 and Fig.3B), a power distributor coupling said antennas with said transceiver (Fig.4A, splitter).

Regarding claim 2, Shapira et al discloses a polarization plane of any antenna is orthogonal to a polarization plane of an adjacent antenna (Par.48;6-10; Par.49;4-7).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapira et al and Bleret et al in further view of Strickland.

Regarding claim 3, Shapira et al discloses all the limitations as recited in claim 1. Shapira et al does not expressly disclose the steps of; selecting one of the antennas having the largest interference, rotating angle of polarization plane of the selected antenna to determine angle of polarization plane called a reference angle so that interference becomes the minimum, or determining angle of polarization plane of other antennas based upon said reference angle so that angle of polarization plane of any antenna is orthogonal to angle of polarization plane of an adjacent antenna.

Bleret et al discloses selecting one of the antennas having the largest interference (Col.2;15-18 and 59-61). To one skilled it the art it would have been obvious to see the detection of a signal and selection of phase shift that produces a minimum signal level as the same as selecting one of the antennas having the largest interference.

Strickland discloses a system and device for rotating the polarization of a signal emanating from or being received by an antenna system through mechanical means (Col.1;67-Col.2;15). It is known in the art that an electric vector from transmit antenna to receive antenna is aligned on the same vector such that the emitted wave is co-planarly adjacent to the reception antenna for minimum interference (Col.1;22-26). To a skilled artisan, it would be obvious to determine the angle of polarization by rotating an antenna in effect, rotating angle of polarization, in order to achieve a minimum interference or maximize reception.

Shapira et al discloses transmit and receive antenna elements comprising a pair of orthogonally polarized elements (Par.48;6-10,) and those antenna elements may be arranged in 8x1, 12x1, or 16x1 configurations (Par.49;4-7), To someone skilled in the art, it would be obvious from the teaching of Strickland in the above paragraph and Shapira et al's orthogonally polarized antenna elements that the angle of polarization plane of each antenna would be inherently determined in order to maintain the orthogonality of adjacent antennas. The angle of polarization plane would be with respect to the reference angle so therefore the polarization plane of any antenna is orthogonal to the angle of polarization plane of an adjacent antenna. One of ordinary skill in the art would have been motivated to do this because polarization plane of all the antennas is determined and an interference of all the antennas becomes the minimum.

Regarding claim 4, Shapira et al discloses all of the limitations of claim 1. Shapira et al does not expressly disclose selecting one of the antennas having the largest interference, selecting one of vertical polarization plane and horizontal polarization plane of said selected antenna, as a reference polarization plane, or determining angle of polarization plane of other antennas based upon said reference polarization plane so that polarization plane of any antenna is orthogonal to an adjacent antenna.

Bleret et al discloses the selection of one of the antennas having the largest interference (See claim 3 rejection) and selecting one of vertical

polarization plane and horizontal polarization plane of selected antenna. To a skilled artisan, selecting one of vertical polarization plane and horizontal polarization plane of said selected antenna, as a reference polarization plane would be obvious. (Col.4;64-Col.5;3) Some sort of reference point, i.e. one of horizontal and vertical polarization plane is necessary, in order to determine the adjustment necessary or angle of polarization plane.

Strickland discloses a system and device for rotating the polarization of a signal emanating from or being received by an antenna system through mechanical means. (Col.1;67-Col.2;15) it is known in the art that an electric vector from transmit antenna to receive antenna is aligned on the same vector such that the emitted wave is co-planarly adjacent to the reception antenna for minimum interference. But to a skilled artisan, it would be obvious to determine the angle of polarization by rotating an antenna in effect, rotating angle of polarization, in order to achieve a maximum or minimum interference.

Shapira et al discloses transmit and receive antenna elements comprising a pair of orthogonally polarized elements (Par.48;6-10,) and those antenna elements may be arranged in 8x1, 12x1, or 16x1 configurations (Par.49;4-7). To someone skilled in the art, it would be obvious from the teaching of Strickland in the above paragraph and Shapira et al's orthogonally polarized antenna elements that the angle of polarization plane of each antenna would be inherently determined in order to maintain the

orthogonality of adjacent antennas. The angle of polarization plane would be with respect to the reference angle so therefore the polarization plane of any antenna is orthogonal to the angle of polarization plane of an adjacent antenna. One of ordinary skill in the art would have been motivated to do this because polarization plane of all the antennas is determined and an interference of all the antennas becomes the minimum.

6. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Shapira et al in view of Bleret et al.

Regarding claim 6, Shapira et al discloses all the limitations as recited in claim 1. Shapira et al does not expressly disclose selection of one of horizontal polarization and vertical polarization of each antenna. Bleret et al does disclose selection of a horizontal or vertical polarization of an antenna to minimize interference (Col.4;66-Col.5-2). Although he does not expressly disclose this selection for each antenna, Shapira et al discloses orthogonally polarized antenna elements of 8x1, 12x1, 16x1 array configuration (Par.48;6-10 and Par.49;4-7) and a skilled artisan would know that any of these antennas remain orthogonal with respect to an adjacent antenna, therefore it is inherent that a selection of vertical polarization plane and horizontal polarization plane will occur for each antenna at some point in order to adjust polarization angles for maintaining orthogonality. One of ordinary skill in the art would have been motivated to do this because polarization plane of all the

antennas is determined and an interference of all the antennas becomes the minimum.

7. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Shapira et al in view of Strickland.

Regarding claim 7, Shapira et al discloses all the limitations as recited in claim 1. Shapira et al does not expressly disclose a rotating polarization of each antenna, so that interference in an antenna is the minimum and nor does he disclose a way of determining angle of polarization plane which provides minimum interference. Strickland discloses a system and device for rotating the polarization of a signal emanating from or being received by an antenna system through mechanical means (Col.1;67-Col.2;15). It is known in the art that an electric vector from transmit antenna to receive antenna is aligned on the same vector such that the emitted wave is co-planarly adjacent to the reception antenna for minimum interference (Col.1;22-26). To a skilled artisan, it would be obvious to determine the angle of polarization by rotating each antenna in effect, rotating angle of polarization, in order to achieve a minimum interference.

Shapira et al discloses orthogonally polarized antenna elements of 8x1, 12x1, 16x1 array configuration (Par.48;6-10 and Par.49;4-7). A skilled artisan would know that all the antennas would remain orthogonal with respect to an adjacent antenna from Shapira et al's teaching, therefore it is inherent that a selection of vertical polarization plane and horizontal

polarization plane will occur for each antenna at some point in order to adjust polarization angles for maintaining orthogonality. One of ordinary skill in the art would have been motivated to do this because polarization plane of all the antennas is determined and an interference of all the antennas becomes the minimum.

8. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Shapira et al and Strickland in further view of Lindskog et al.

Regarding claim 8, Shapira et al discloses all the limitations as recited in claim 1. Shapira et al does not expressly disclose the antennas being classified into groups each having a plurality of antennas, determining polarization plane of a first antenna in a first group, determining polarization plane of a second antenna in a first group, said second antenna locating adjacent to said first antenna, so that polarization plane of said second antenna is orthogonal to polarization plane of said first antenna, repeating said step (c) for other antennas, and repeating said steps (b) and (c) for the antennas in other groups. Lindskog et al does disclose antennas being classified into groups each having a plurality of antennas (claim 19).

Strickland discloses a system and device for rotating the polarization of a signal emanating from or being received by an antenna system through mechanical means. (Col.1;67-Col.2;15) it is known in the art that an electric vector from transmit antenna to receive antenna is aligned on the same vector such that the emitted wave is co-planarly adjacent to the reception

antenna for minimum interference. But to a skilled artisan, it would be obvious to determine the angle of polarization by rotating an antenna in effect, rotating angle of polarization, in order to achieve minimum interference.

The teaching of Strickland in the above paragraph in combination with Shapira et al's teaching of orthogonally polarized elements arranged adjacent to each other (Par.48;6-10 and Par.49;4-7) would result in the determination of the angle of polarization plane of other antennas. The angle of polarization plane would be with respect to the polarization plane of the first antenna so that the polarization plane of any antenna is orthogonal to the angle of polarization plane of an adjacent antenna.

From the teaching of Strickland and Shapira et al in the above paragraph it is inherent that the polarization plane of a second antenna adjacent to a first antenna in a first group would be orthogonal to the polarization plane of said first antenna. Whether it be first, second, or third antenna, a polarization plane will be determined for other all antennas and antennas will have polarization planes orthogonal to polarization plane of adjacent antenna in each group. One of ordinary skill in the art would have been motivated to do this because polarization plane of all the antennas is determined and an interference of all the antennas becomes the minimum and the interference by other systems located in adjacent areas is reduced.

Allowable Subject Matter

9. Claim 5 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose all the limitations of claim 5 in its entirety. While the prior art discloses all limitations of the first step of claim 5 it does not disclose all the limitations of the second step so therefore claim 5 cannot be rejected but objected to.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley L Kim whose telephone number is 703-605-4319. The examiner can normally be reached on Monday-Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 703-308-5318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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